In the Specification

Please replace the below referenced paragraphs in the specification with those that follow. A marked up version of the paragraphs showing changes made is attached hereto as Attachment 2.

page 3, lns. 1-19

Whether or not anomalous pulses are present in the acquired signal, the operator may wish to determine the statistics of certain measurements across a large number of pulses in the acquisition for the purpose of margins analysis. For example, the duty cycle of a clock waveform may need to be analyzed to insure that the minimum and maximum bounds are not exceeded. Some conventional systems include facilities for determining measurement statistics, however, in such implementations, the statistics are accumulated from measurements performed over multiple acquisitions and/or the results are computed such that a given measurement value is not readily traceable to the pulse it is associated with. Accumulating statistics over multiple acquisitions is disadvantageous because the acquisitions may relate to different operating conditions in the circuit or system being analyzed. Additionally, depending on how many pulses are measured from each acquisition, the tine spacing between measured pulses may vary significantly, making statistical understanding less straightforward. When statistics are computed without traceability to individual pulses, the operator is unable to view the particular pulse associated with the given measurement result. Without a view of the pulse, the operator is at a loss to determine when caused the measurement result. In sum, in currently available signal measurement systems, it is difficult for an operator to characterize or troubleshoot a system or circuit through analysis of the large number of pulses that may be captured in a single acquisition.

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page 21, ln. 24-page 22, ln. 4

Specifically, pulse analyzer 204 searches pulse data array 206 for pulses that satisfy an operator-generated search criteria. Similarly, pulse analyzer 204 sorts the selected subset of pulses based on an operator-generated sort criteria. Pulse analyzer 204 provides the operator with a graphical user interface environment in which the operator may specify

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the search and sort criteria and in which pulse analyzer 204 may display the selected pulses with their associated pulse measurement results. Pulse analyzer 204 can also display the results of the search and sort operations, and other information related to pulse data array 206 that is related to the operator's investigation into the acquired signal. In accordance with one embodiment of the invention, pulse data array query 214 includes queries for measurement statistics 324, and reply 216 includes the requested statistics.

page 22, lns. 17-22

Figure 11 is a high-level flow chart of the processes performed by pulse manager 118 in accordance with one embodiment of the present invention. At block 1102, pulse manager 118 generates a pulse data array 206 having stored therein pulse characteristics of a previously acquired signal. At block 1104, the contents of the pulse data array are analyzed in response to operator specifications. The operations performed in blocks 1102 and 1104 are described in detail below.

page 26, lns. 4-12

Measurement source 328 uniquely identifies the acquisition signal data in the acquisition memory that is to be processed by pulse database generator 202. In embodiments such as those noted above, to uniquely identify acquisition data 208, measurement source 328 identifies the specific channel and acquisition event resulting in the capture of the desired acquisition data 208. In alternative embodiments, additional or less information is provided to histogrammer 302 depending on the function and structure of the acquisition memory. For example, in one application, at any given time, the acquisition memory stores acquisition data 208 associated with a single channel. In such circumstances, measurement source 328 need not be provided.

page 33, lns. 1-11

In the exemplary embodiment illustrated in Figure 3, pulse database generator 202 also generates measurement statistics 324. Measurement statistics 324 include global statistical values that provide insight into the acquired data 208 as a whole rather than an individual pulse. Such information serves many purposes including, for example, providing norm or average reference values when analyzing individual signal pulses.

Measurement statistics include for example, the maximum, minimum, mean, mode, median and standard deviation of each signal pulse measurement. Preferably, pulse measurement engine 310 calculates measurement statistics 324 as pulse characteristics 212 is generated. As one of ordinary skill in the art would find apparent, such statistical analyses can be performed during or after the pulse measurements are performed on all pulses of the acquired signal.

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page 33, lns. 20-25

Referring now to Figure 8, dialog box 800 provides a series of checkboxes 802 each associated with one or more a signal pulse measurement identifiers 804A-804G. In the embodiment shown, certain check boxes are mapped to a single signal measurement, such as rise time 804A and fall time 804B. Other checkboxes are mapped to more than one signal measurement. For example, measurement selection 802F is mapped to all signal measurements, as indicated by the identifier 804F of "All."

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page 34, ln. 24-page 35, ln. 2

It is noted that in this illustrative embodiment, acquisition identifier 402 for each acquisition event is a simple integer in Figure 4 for ease of illustration. It should be appreciated, however, that values other than integers can be used to represent the acquisition in pulse data array 206. For example, a different type of data unit having the structure, size, and other attributes dictated by the implementation can be used. For example, if pulse database generator 202 and pulse analyzer 204 were implemented in the C^{++} programming language, then pulse data array 206 would be an array of structures and acquisition number 402 might be the index into the array.

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page 40, lns. 18-29

Pulse analyzer 204 is a device that implements functionality to provide an operator with the ability to search, sort, filter, select, view and otherwise manipulate pulse characteristics 212 stored in pulse data array 206. The operator can manipulate pulse characteristics 212 as necessary to select for display on user interface 116 acquired data 208 of the desired pulse along with its measurement results to gain insights into the behavior of the system or circuit being evaluated. A functional block diagram of one

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embodiment of pulse analyzer 204 is illustrated in Figure 5. This embodiment of pulse analyzer 204 will now be described in detail below. In the following description, pulse data array 206 is a data structure that is accessible to and usable by pulse analyzer 204. However, it should become apparent from the following disclosure that pulse analyzer 204 can be configured to operate with any data structure containing pulse characterization data 212.

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page 43, ln. 18-page 44, ln. 3

Should a specified search not provide the results desired, the operator can return to dialog box 900 to modify the search criteria specifications. In addition, should the specified search be too broad and capture more pulses than desired, the operator can further refine the search through the selection of the "Refine Search" button 930 located in dialog box 900. Selection of button 930 causes the display of a "next search level" dialog box (not shown) having similar data entry fields as those shown in Figure 9. In such embodiments, searcher 502 stores the specifications entered into dialog box 900 as a "level 1 search" and those entered into the next dialog box as a "level 2 search". Searcher 502 combines the two levels of search criteria when performing a search of pulse data array 206. However, the search criteria for each level are maintained separately, enabling the operator to refine a search (with a level 2 search criteria), examine the results (of the combined level 1 and level 2 search) and return to the original, broader search (level 1 search) to refine the search again (with a new level 2 search criteria), examine the results (of the combined level 1 and new level 2 search), and so on to effect a desired result. It should be understood that any number of search levels may be managed by searcher 502.

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page 44, lns. 4-12

When the operator selects the "Apply" button, graphical user interface 116 converts the data in the data entry fields of dialog box 900 into a syntax string and provides the resulting string to searcher 502 as search criteria 520. Searcher 502 then searches pulse data array 206 using the specified search criteria 520. In an alternative embodiment, upon selection of the "String Entry" button 934 a single data field is displayed in which the operator can enter the search criteria in the form of a string. In such embodiments, searcher 502 preferably includes a syntax checker that verifies the

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command string entered and, perhaps, provides some form of assistance to educate the operator on the details of the implemented syntax.

page 46, lns. 17-26

Of the 1075 pulses in pulse data array 206, the results of the exemplary search yielded 7 pulses; that is, of the 1075 acquired pulses, 7 pulses satisfied the specified search criteria 520. The exemplary subset index array 602 includes a subset index 608 ranging from 1 to 7, sequentially numbered with the associated pulses numbers 404 ordered from the smallest pulse number to the largest; that is, subset array 602 is simply a time-ordered list. Thus, pulse numbers 5, 27, 180, 324, 641, 850 and 972 are stored in subset array 602 with subset indices of 1-7, respectively. Called out in sort index array 602 are three particular pulse numbers 7A-7C which are described below with reference to Figures 7A-7C. Also, the relationship between search index array 602 and the other arrays illustrated in Figure 6 is described below.

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page 47, lns. 2-9

As noted, pulse analyzer 204 provides the operator with the capability to sort the selected subset of acquired pulses identified in subset index array 510. Sorter 504 sorts this subset of pulses in accordance with sort criteria 524, and generates a sort index array 512. Sort index array 512 is a sorted list of indices into subset index array 410, ordered in accordance with sort criteria 524. In certain embodiments, sorter 504 also generates a cross reference array 514 that includes a list of sort array indices indexed by subset array indices, providing backward mapping from sort index array 512 to subset index array 510. This is described in greater detail below.

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page 47, lns. 14-21

In Figure 9B a "Pulse Sort Criteria" dialog box 950 is illustrated. In this embodiment, each sort criterion 952 can be specified by the operator by entering information in data entry fields, or by selecting information from pull-down menus. The structure and operation of dialog box 950 is not described further herein due to its similarities with Pulse Selection Criteria dialog box 900 illustrated in Figure 9A and described above. It should be understood that each sort criterion 952 can be a single

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measurement as shown in Figure 9B, or can be an arithmetic combination of more than one measurement having common units; for example, rise time and fall time. Further, it should be noted that multiple sort criterion 952 can have a hierarchical precedence 954, e.g., primary, secondary and tertiary precedence.

page 47, lns. 22-28

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It should be noted that the breadth of options available for sort criteria 524 is significant, and stems from sorter 504 having access to pulse data array 206. Thus, sort criteria 524 is independent of search criteria 520, searcher 502 and subset index array 510. In other words, access to pulse data array 206 provides sorter 504 with the capability of considering any and all pulse characteristics stored in pulse data array 206. As a result, sort criteria 524 can include the same or different criteria than search criteria 520.

page 47, ln. 29 – page 48, ln. 7

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In operation, sorter 504 accesses subset index array 510 and retrieves sequentially each pulse number 404 stored therein. Sorter 504 then accesses pulse data array 206 with the retrieved pulse number 404. This is illustrated in Figure 5 as pulse information request 534. Sorter 504 retrieves the relevant pulse characteristics for the queried pulse number 404, as indicated by pulse information 536. Sorter 504 then applies sort criteria 524, assigning a subset index to the subset index 608 associated with the pulse number such that the pulse is in the appropriate relative order in sort index array 512. This process is repeated for all pulses identified in subset index array 510, with the order of the pulses changing as appropriate.

In the Abstract

Please replace the abstract with that which follows. A marked up version is attached hereto as Attachment 3.

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A pulse management system for use by an operator that automatically performs measurements on a subset of pulses of an acquired signal stored in a memory, and generates a data structure that stores characteristics of the subset of signal pulses,